



Chapter 1

2006 NOAA Accomplishments and Performance Results



2006 Accomplishments

White House Designates World's Largest Fully Protected Marine Area as Marine National Monument

In June, President George W. Bush designated the Northwestern Hawaiian Islands as a marine national monument, providing protection to a multitude of natural and cultural resources. Northwest of the principal Hawaiian Islands, the monument stretches approximately 1,200 nautical miles to include coral islands, seamounts, banks, and shoals. At nearly 140,000 square nautical miles, the Northwestern

Hawaiian Islands Marine National Monument becomes the largest fully protected marine area in the United States and in the world. For the first time in its history, NOAA will play a leading role in protecting a national monument. While the U.S. Fish and Wildlife Service will continue to manage the two existing refuges and the State of Hawaii will manage state-controlled waters, NOAA will have primary responsibility for managing the marine areas of the monument.

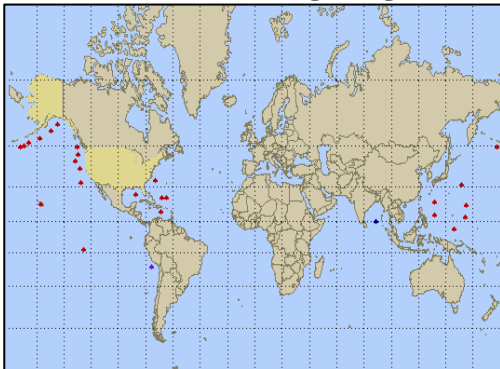


Magnuson-Stevens Act (MSA) Reauthorization

President George W. Bush signed the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006 into law on January 12, 2007. The Act is the foremost bill that governs fishery management activities in federal waters. "Enactment of this bill is one of the top priorities of the Ocean Action Plan and is another significant bipartisan environmental achievement." The reauthorized Magnuson-Stevens Act strengthens NOAA's ability to end overfishing and rebuild fish stocks.



U.S. Tsunami Warning Program - Initial Operating Capability (IOC) Achieved



With the December 11, 2006 deployment of DART #23 in the Western Pacific Ocean, NOAA achieved initial operating capability (IOC) of the planned expanded U.S. Tsunami Warning Program. For this program, IOC was defined as the core baseline infrastructure elements needed to operate a tsunami warning system for the U.S., ensuring that the most dangerous tsunami generation areas are covered by DART stations combined with full 24/7 operations of the nation's



two Tsunami Warning Centers (achieved in April 2006). NOAA deployed 25 of the 39 planned DART buoy stations in 2006. Included in this number are five new DART buoy stations deployed in the Atlantic, the Caribbean, and the Gulf of Mexico, four additional DART buoys along the West Coast and the Aleutians, and six new DARTs in the Western Pacific Ocean.

Red Tide Monitoring Protects Human Health and Coastal Economies in New England

In the wake of the 2005 New England red tide crisis that forced the closure of most shellfisheries in the region, NOS provided additional emergency funding in 2006 to provide timely and critical information to state managers and to build upon long-term research supported by its Ecology and Oceanography of Harmful Algal Bloom (HAB), Monitoring and Event Response for Harmful Algal Bloom programs at the Woods Hole Oceanographic Institution, as well as other partner institutions. In the spring of 2006, NOS-sponsored monitoring cruises detected low levels of cells until weather conditions similar to 2005 occurred, leading to a rapid escalation of the bloom and subsequent shellfishery closures in Massachusetts, New Hampshire, and Maine. NOS funding supported modeling to predict the course of the bloom, based on coupled physical-biological models developed with earlier funding, and a listserv and website to facilitate communication and instant access to data and model results. All of these efforts allowed New England managers to make more strategic sampling and shellfish bed closures/openings to protect human health and minimize the economic impacts of HABs.



NOAA/Department of Homeland Security Collaboration Enables a NOAA Weather Radio to Be Placed in Every Public School in America



The National Weather Service and DHS worked to get 97,000 NOAA Weather Radios placed in every public school in America to aid in protecting students from hazards. Hazards include both natural as well as man-made, accidental or not. Local Weather Forecast Offices provided, in many cases, expertise in programming the radios to select specific hazards the school wanted to be alerted for as well as the geographic areas or each category of alert. This has been a multi-month project that required close collaboration between the Department of Homeland Security, the Department of Education, and the Department of Commerce/NOAA. This enables the local schools to be connected to part of the nation's



Emergency Alerting System and greatly increases environmental situational awareness and increases public safety.

National Estuarine Research Reserve System Adds 27th Reserve

On May 6, VADM Lautenbacher, NOS AA Dunnigan, Texas Senator Hutchison (R-TX) and others dedicated the newest site in the National Estuarine Research Reserve System



in Port Aransas, TX. The Mission-Aransas Reserve is the nation's 27th reserve and adds representation of a new biogeographic area to the system. It is also the third largest reserve, with 185,708 acres of public and private land and water.

The National Estuarine Research Reserve System is a network of 27 reserves encompassing more than 1.3 million acres of estuaries in 21 states and Puerto Rico. The system is a federal-state partnership. NOAA provides national program guidance and operational funding, while state or territorial agencies own the land and manage the facilities. The reserves serve as “living laboratories” for scientists, provide science-based education programs for students and the public, and offer training programs for coastal decision makers.

Fishery Response to Hurricane Katrina

NOAA mounted a multi-pronged effort to address fishery-related impacts in the Gulf of Mexico in FY 2006. In August, 2006, NOAA awarded \$128 million, the largest grant in its history, to the Gulf States Marine Fisheries Commission to reseed and restore oyster beds and to conduct fisheries monitoring in the Gulf. NOAA also conducted research surveys and monitored the seafood coming from the Gulf to ensure it was safe from PCBs, pesticides, and fossil fuels. In addition to completing comprehensive seafood contaminant studies, NOAA Fisheries completed a comprehensive coastal socioeconomic study.



Wide Application Potential of Unmanned Aircraft Systems (UASs) Demonstrated

UAS platforms could provide cost-effective means to: enforce regulations over NOAA's National Marine Sanctuaries, conduct long endurance flights for weather, conduct

research over areas that pose significant risks to pilots, validate satellite measurements, provide counts of marine mammal populations, monitor atmospheric composition and



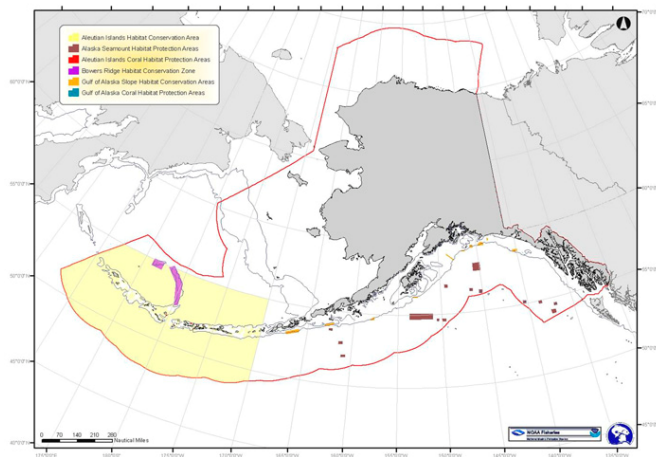
climate, and hover above hurricanes and gather critical data for input into hurricane models. In February 2006, NOAA used the Silver Fox UAS to conduct flight operations over the Hawaiian Islands Humpback Whale National Marine Sanctuary. In March 2006, NOAA participated in an air quality study in the

Indian Ocean led by Scripps Institution of Oceanography that used Manta UASs to observe aerosol-radiation cloud-climate interactions. On October 24-25, 2006, NOAA and other federal partners (NASA, Federal Aviation Administration, and the U.S. Forest Service) utilized UASs to study wildfires in Yosemite National Park, CA. The 20-hour flight measured temperature, ozone, water vapor, and five other trace gases. This was the first successful long endurance UAS flight operation for scientific study in national airspace. It is an example of how UAS platforms can remain aloft for many hours and fly in areas that would normally be dangerous for manned flights.

Protecting Habitat Essential to Fish

In 2006, over 500,000 square miles of U.S. Pacific Ocean habitats were protected from damage by fishing practices, particularly bottom-trawling. Combined, these areas are more than three times the size of all U.S. national parks. The historic protections, implemented by NOAA with the support and advice of the regional fishery management councils, fishing industry, and environmental groups, made the protection of essential fish habitat and deep coral and sponge assemblages a significant part of management efforts to conserve fisheries in the Pacific Ocean.

- *Aleutian Islands Habitat Conservation Area:* NOAA worked collaboratively with the North Pacific Management Council, the fishing industry, and environmental groups to devise a landmark suite of new protection measures against habitat injuries caused by bottom-trawling. This represents the largest single conservation measure in the United States -- the Aleutian

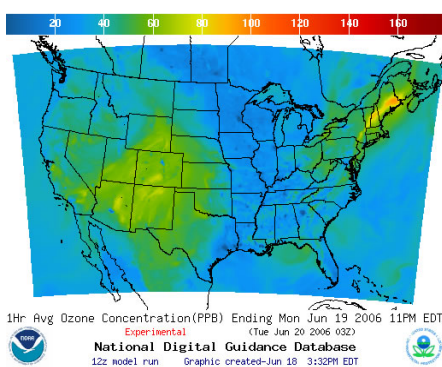




Islands Habitat Conservation Area, which is approximately 369,000 square miles. Additional habitats in the Gulf of Alaska slope and seamounts were also protected. These areas conserve a diverse range of habitats that support deep-sea corals, productive fisheries, and marine mammals.

- *West Coast Habitat Conservation Areas:* In June 2006, NOAA and the Pacific Fishery Management Council established habitat conservation areas off the coasts of Washington, Oregon, and California covering more than 150,000 square miles of ocean habitat. Fishing methods that can cause long-term damage to sensitive ocean floor habitats were prohibited within most of these areas. Much of the impetus to the trawl closures was to protect sensitive biogenic habitats, including deep corals and sponges.

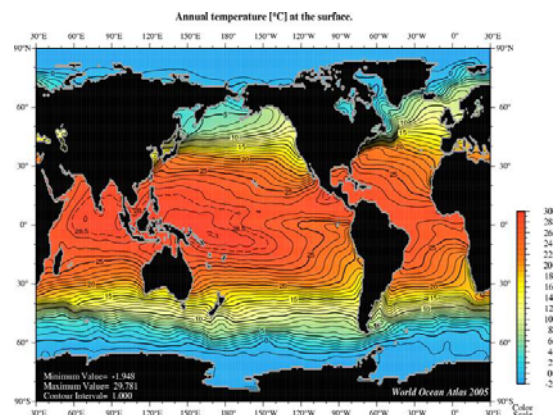
Air Quality Experimental Modeling Expanded Nationwide



NOAA, in partnership with the Environmental Protection Agency (EPA), is building a national air quality forecast capability to improve the basis for Air Quality alerts and to provide air quality forecast information for people at risk. Air Quality alerts, usually next-day, single-value, worst-case air quality forecasts, are issued by state and local air quality forecasters for some 300 cities across the US. Beginning June 1, 2006, NOAA's experimental next-day forecast guidance was expanded to cover the lower 48 states at 12 km grid resolution, with hour-by-hour predicted concentrations of ozone throughout the following day. This effort also supports the U.S. Group on Earth Observation's near-term air quality monitoring and forecasting plan.

World Ocean Database 2005 (WOD05)

NOAA's National Oceanographic Data Center (NODC) released a major upgrade to its World Ocean Database product. WOD05 is the largest collection of quality-controlled ocean profile data available internationally without restriction. Data for 29 ocean variables, including plankton data, are included in WOD05. The database includes an additional 900,000 temperature profiles not available in its predecessor. All data are available on-line for public use. The ocean and climate scientific communities use the database as the basis of research quality ocean profile data sets in order to describe the temporal and spatial variability of physical, chemical, and biological





parameters in the ocean. The database is also a crucial part of the Integrated Ocean Observing System (IOOS) and the Global Earth Observation System of Systems (GEOSS).

Sea-Level Gauge Network Upgraded to Better Predict Tsunamis

NOAA continued to monitor sea height through a network of buoys and tide gauges, collecting information critical to understanding the time of arrival and the height of tsunami waves. In 2006, NOAA completed the installation of eight new National Water Level Observation Network (NWLON) stations to fill gaps in the detection network, bringing the two-year total to 15. The 15 stations were installed in California, Oregon, Washington, Alaska, Puerto Rico, and the Virgin Islands. These and other new stations brought the NWLON to 200 stations by the end of calendar year 2006. In addition, NOAA continued to upgrade the entire NWLON to real-time status by replacing over 50 data-collection platforms.



Satellite Launches Ensure Satellite Data Continuity

Two satellite launches this year helped ensure continued access to geostationary and polar-orbiting satellite data for users. On May 24, 2006, GOES-N, a geostationary satellite, was successfully launched from Cape Canaveral Air Force Station in Florida. Upon reaching final orbit, the satellite was renamed GOES-13. This is the first in a new series of satellites featuring a more stable platform enabling improved instrument performance. NOAA instruments were also launched on the European MetOp-A polar-orbiting satellite in October 2006. Combined with NOAA and Department of Defense (DoD) satellites, MetOp will help provide global data for improving forecasts of severe weather, disaster mitigation, and monitoring of the environment. This launch ushered in a new era of U.S.-European cooperation in environmental observing.



Tsunami Warning System Improved

NOAA's Pacific Marine Environmental Laboratory in Seattle, WA, designed easy-to-deploy Deep-ocean Assessment and Reporting of Tsunamis (DART)-II technology, which provides two-way communication capabilities, allowing engineers the ability to troubleshoot these systems from the lab and repair the systems remotely when possible. The new capability minimizes system downtime, especially in the harsh winter conditions



of the North Pacific, and moreover, saves money by not having to deploy a ship to make this type of repair. The DART program also created tsunami impact forecast models for nine major coastal communities, providing much-needed information for inundation maps. Plans call for the U.S. Tsunami Warning Network to total 39 DART II buoy stations by mid-summer 2008 (32 in the Pacific and seven in the Atlantic Basin).

New Arctic Observatory Established for Long-Term Climate Measurements

NOAA's Earth System Research Laboratory (ESRL) in Boulder, CO, in conjunction with the Canadian Network for Detection of Arctic Change (CANDAC) program, and the Meteorological Service of Canada established a research site located in Eureka, Nunavut on Ellesmere Island, to make long-term climate measurements of Arctic clouds and aerosols. The NOAA observatory is operated in Canada's High Arctic by the NOAA Arctic Programs Office through ESRL as a contribution to the U.S. Studies of Environmental Arctic Change (SEARCH) program. A collection of state-of-the-art



scientific equipment has been assembled at the site, including cloud radar, high spectral resolution lidar and spectral and narrow-band radiometers. This observatory supports NOAA's activities for the 2007 International Polar Year.

Tsunami Indian Ocean DART Deployment

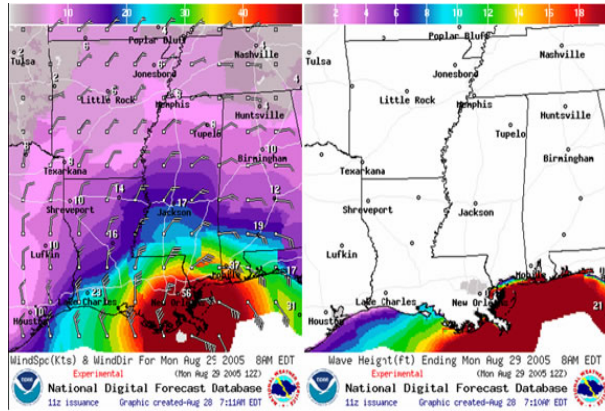
NOAA joined the government of Thailand in deploying the first Deep-ocean Assessment and Reporting of Tsunami (DART) buoy station in the Indian Ocean. With funding from the U.S. Agency for International Development, NOAA built and provided the DART station. The buoy will be maintained by the Thai Meteorological Department and National Disaster Warning Center. The station's data will be available to all nations through the World Meteorological Organization Global Telecommunications System and will contribute to the Global Earth Observation System of Systems. The Thai DART buoy is the first of 22 DART stations planned for the Indian Ocean's regional tsunami warning system. NOAA will provide a second DART buoy (to be deployed farther south) in the spring of 2007.





National Digital Forecast Database (NDFD) Operational Fields Empower the Weather Enterprise

As the foundation of Digital Services, the NDFD consists of digital forecasts of weather elements (e.g., cloud cover, maximum temperature) produced through a collaborative process between weather forecasts offices and made available through the Internet. The initial database aggregates digital forecasts and allows private sector and weather-sensitive businesses to create products and services useful to themselves and their customers. In FY 2006, NOAA's National Weather Service upgraded four experimental elements (wind speed, wind direction, apparent temperature, and relative humidity) to operational status for the conterminous U.S. (CONUS) Puerto Rico/Virgin Islands, Hawaii, and Guam.



New World-Class Home for NOAA Satellite Operations

In 2006, NOAA satellite operations and data processing groups began moving into its new home in the NOAA Satellite Operations Facility (NSOF). Key to the successful move was the teamwork needed to provide continuous observations and data processing capabilities while moving locations. NSOF will house the NOAA satellite command and control functions and data and distribution activities that are central to the National Environmental Satellite, Data, and Information Service (NESDIS) mission. In addition to



the satellite control center and data processing facilities, NSOF will house the U.S. Mission Control Center for the Search and Rescue Satellite-Aided Tracking (SARSAT) program and the National Ice Center (NIC), a joint NOAA/DoD mission to track ice floes and issue warnings to the nation's maritime force. NESDIS will complete its move into the new building and become fully operational in spring 2007.

NOAA Scientists Identify Carbon Dioxide Threats to Marine Life

A report co-authored by NOAA research scientists Richard Feely and Christopher L. Sabine of NOAA's Pacific Marine Environmental Laboratory in Seattle, Washington, documents how carbon dioxide is dramatically altering ocean chemistry and threatening



the health of marine organisms, including corals. The researchers also uncovered new evidence of ocean acidification in the North Pacific. Scientists observed measurable decreases in pH along with an increase in dissolved inorganic carbon, both signs of ocean



acidification, which may be the result of the ocean's uptake of anthropogenic carbon dioxide. The increased acidity lowers the concentration of carbonate ion, a building block of the calcium carbonate that many marine organisms use to grow their skeletons and create coral reef structures. The report resulted from a workshop sponsored by NOAA, the National Science Foundation, and the U.S. Geological Survey. Feely and Sabine were among a group of NOAA researchers awarded the Commerce Department's gold medal for pioneering research leading to the discovery of increased acidification in the world's oceans.

First Operational Satellite Products for Ocean Biology

In June 2006, NOAA began to process and distribute ocean biology products for U.S. coastal waters, using satellite observations. Products such as chlorophyll concentration, represent the first satellite-derived biological products generated by NOAA Satellite and Information Service for coastal and open ocean waters. These products are useful in detecting and monitoring harmful algal blooms, assessing regional water quality, and locating suitable habitat for fish and other important marine species. Development of these products prepares NOAA for moving towards generating and distributing ocean biology products in the global ocean after 2010.

Recapitalization of NOAA Ships and Planes Continued

This was another landmark year for NOAA's fleet modernization. The Office of Marine and Aviation Operations (OMAO) celebrated two major construction milestones in June. VT Halter Marine, Inc. began construction of the last of four new fisheries survey vessels (FSV) of the same class. FSV 4 will be home-ported on the West Coast and will be operational in FY 2009. Also in June was the keel-laying ceremony for FSV 3, PISCES, which will be home-ported in Pascagoula, MS, starting in FY 2008. In July, NOAA accepted delivery of FSV 2, HENRY B. BIGELOW, which will be home-ported in New England. In September, NOAA exercised the detailed design and construction portion of the SWATH Coastal Mapping Vessel (CMV) contract. SWATH should be delivered in June 2008 and will be





homeported in New Hampshire. The Navy transferred a “retired” P-3 aircraft to NOAA in response to the hurricane supplemental bill attached to the FY 2006 Defense appropriations legislation. Rehabilitation of the P-3 is expected to be completed by the start of the 2008 hurricane season. Additionally, OMAO replaced three under-utilized aircraft with a fourth Twin Otter.

Gulf Coast Recovery

NOAA ships and aircraft provided critical response and recovery capabilities in the aftermath of Hurricanes Katrina and Rita. During FY 2006, NOAA ship NANCY FOSTER conducted a seafood contamination study for NOAA Fisheries near the Mississippi Delta to spot potential safety issues. NOAA ship THOMAS JEFFERSON completed obstruction surveys in the Gulf of Mexico so that busy ports and shipping lanes could be re-opened to traffic. NOAA’s Citation aircraft flew post-storm damage assessment surveys along the coasts of the Gulf States. This imagery was downloaded on the NOAA website, enabling emergency managers, local officials, and average citizens to inventory damage and prioritize recovery efforts.

Doubling of Minority PhD Recipients in Atmospheric and Environmental Sciences

The number of African Americans receiving PhDs has doubled in both Atmospheric and Environmental sciences through the Environmental Partnership Program (EPP). NOAA is proud to be part of this outstanding achievement. The goal of EPP is to increase the programs and opportunities for students to pursue applied research and education in atmospheric, oceanic, and environmental sciences and remote sensing and scientific environmental technology programs, principally among MSIs.

In September 2006, EPP awarded \$62.5M to five universities and 31 of their university partners who successfully competed to establish NOAA Cooperative Science Centers. These funds assist schools in further developing their programs in atmospheric, environmental, and marine sciences as well as remote sensing and scientific environmental technology.



During the past five years, 252 students have graduated with degrees in NOAA-related sciences, with another 372 students enrolled. It is estimated that in the next three to five years the number of PhD and MS students graduating with degrees in sciences relevant to NOAA will again double the number of students from underrepresented



communities. Currently more than 30 graduates from this partnership program are employed with NOAA.



NOAA Management

Satellite Acquisition Program

NOAA has taken significant steps to restructure the National Polar-Orbiting Operational Environmental Satellite System (NPOESS) program and improve oversight. New management has been put in place in both the Federal and private sectors. Metrics have been instituted to track every facet of program activity with increased oversight from both the Government and contractors. The next geostationary operational environmental satellite (GOES-R) program has under-gone significant internal and external review which as resulted in significant changes to the GOES-R baseline program.

Grants and Budget Business Process Reengineering (BPR)

BPR is a NOAA-wide effort to improve efficiency and maximize resources. This year NOAA completed Business Process Reengineering for Grants Administration and Budget. As a result, NOAA has streamlined processes and implemented new IT support and reporting systems.

NOAA Earns Unqualified Audit Opinion for 8th Straight Year

NOAA has been under the scrutiny of an external audit of our financial statements since 1994, and has received an "unqualified opinion" on its statements each year since 1998. An unqualified opinion is an independent auditor's opinion of our financial statements, given without any reservations. This opinion states that the auditor believes NOAA followed all accounting rules appropriately and that the financial reports are an accurate representation of the agency's financial management. The Commerce Business Systems (CBS) and accounting and financial controls are a strength for NOAA.



NOAA GPRA Performance Results

NOAA's mission goals in ecosystems, climate, weather and water, and commerce and transportation are matrixed, from a funding and organizational perspective, to maximize our support of the Departmental performance goal to observe, protect, and manage the Earth's resources to promote environmental stewardship. NOAA currently has 30 Government Performance & Results Act (GPRA) measure targets. In FY 2006, NOAA achieved or exceeded targets on 23 of 30 measures, or 77% of the targets. We expect to improve on our GPRA measures to make them more outcome-oriented and better improve upon our performance results this year and in future years. The funding requested in this budget is essential to improving our scorecard results, and we are employing new and modified measures in FY 2007 and FY 2008 to better represent and assess NOAA's performance in achieving our mission.

NOAA GPRA successes include the number of habitat acres restored and hurricane forecast track error. In addition, accomplishments also consist of reductions to the hydrographic survey backlog within navigationally significant areas, and a reduction to the number of major stocks of fish [see Performance Summary, next page].

NOAA's GPRA goals are focused on the results of key programs and services, support decision-making and congressional oversight, and are designed to measure and improve the performance of NOAA in meeting its mission. GPRA is unique in its requirement that agency "results" be integrated into the budgetary decision-making process. NOAA is continuously striving to improve its measures to better the service it provides to the American public.

For more information on NOAA's FY 2006 performance, please refer to the Department of Commerce FY 2006 Performance and Accountability Report (PAR), found here: <http://www.osec.doc.gov/bmi/budget/FY06PARlink.htm>. These actuals are slightly different from what was reported in the FY 2006 PAR as estimates were provided in the PAR.

Key to Color Coding:

Exceeded Target



Met Target



Slightly Below Target



Did Not Meet Target



NOAA Performance Summary for FY 2006

Goal	MEASURE	FY 2006 Target	FY 2006 Actual	Met/Unmet
Weather and Water	Lead Time (Minutes), Accuracy (%), and False Alarm Rate (FAR) (%) for Severe Weather Warnings for Tornadoes	Lead Time: 13 Accuracy: 76 FAR: 75	12 76 79	
	Lead Time (Min) and Accuracy (%) for Severe Weather Warnings for Flash Floods	Lead Time: 48 Accuracy: 89	47 89	
	Hurricane Forecast Track Error, 48 Hour (Nautical Miles)	111	101	
	Accuracy (%) (Threat Score) of Day 1 Precipitation Forecasts	28	40	
	Lead Time (Hours) and Accuracy (%) for Winter Storm Warnings	Lead Time: 15 Accuracy: 90	17 89	
	Cumulative Percentage of U.S. Shoreline and Inland Areas that Have Improved Ability to Reduce Coastal Hazard Impacts	32%	32	
Climate	U.S. Temperature Forecasts (Cumulative Skill Score)	18	25	
	Reduce the Uncertainty in the Magnitude of the North American (NA) Carbon Uptake	0.4 GtC/yr	0.4 GtC/yr	
	Reduce the Uncertainty in Model Simulations of the Influence of Aerosols on Climate	10% Improvement	10% Improvement	
	Determine the National Explained Variance (%) for Temperature and Precipitation for the Contiguous United States Using USCRN Stations	Captured 97.0% - Annual National Temperature Trend and 91.4% - Annual National Precipitation Trend	Temp – 97.0% Precip – 91.4%	
	Reduce the Error in Global Measurement of Sea Surface Temperature	0.5° C	.53°C	
	Improve Society's Ability to Plan and Respond to Climate Variability and Change Using NOAA Climate Products and Information	32 risk assessments / evaluations communicated to decision makers	33 risk assessments/ evaluations	



Goal	MEASURE	FY 2006 Target	FY 2006 Actual	Met/Unmet
Ecosystems	Number of Overfished Major Stocks of Fish	42	41	
	Number of Major Stocks with an "Unknown" Stock Status	71	71	
	Number of Stocks of Protected Species with Adequate Population Assessments	59	60	
	Number of Protected Species Designated as Threatened, Endangered or Depleted with Stable or Increasing Population Levels	24	25	
	Number of Habitat Acres Restored (Annual/Cumulative)	4,500/ 29,416	7,598/ 32,514	
	Annual Number of Coastal, Marine, and Great Lakes Ecological Characterizations that Meet Management Needs	53	62	
	Cumulative Number of Coastal, Marine, and Great Lakes Issue-Based Forecasting Capabilities Developed and Used for Management	31	31	
	Annual Number of Coastal, Marine, and Great Lakes Habitat Acres Acquired or Designated for Long-term Protection (Annual)	200,137	>86 million	
Commerce & Transportation	Reduce the Hydrographic Survey Backlog within Navigationally Significant Areas (square nautical miles surveyed per year)	2,500	2,851	
	Percentage of U.S. Counties Rated as Enabled or Substantially Enabled with Accurate Positioning Capacity	39%	43.25%	
	Accuracy (%) and FAR (%) of Forecasts of Ceiling and Visibility (3 miles / 1000 feet)	Accuracy: 47%	43%	
		FAR: 65%	64%	
Mission Support	Accuracy (%) of Forecast for Wind Speed and Wave Height	Wind Speed: 58%	55%	
		Wave Height: 68%	70%	
Mission Support	There are no performance measures associated with the Mission Support Goal			